UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 66510

CSAH NO. 19

OVER THE

STRAIGHT RIVER

DISTRICT 6 - RICE COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 5221 (CEI 24A)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 66510, Piers 1 and 2, were found to be in good to satisfactory condition with no defects of structural significance observed. The channel bottom appeared stable with no changes of concern since the previous inspection, although heavy timber debris was now present at Pier 1; whereas there was debris at Pier 2 last time.

INSPECTION FINDINGS:

(A) A heavy accumulation of timber debris was observed at the upstream end of Pier 1, extending down both sides of the pier from 2 feet above the waterline to the channel bottom. A large tree was observed at the span between the piers and resting against the South Fascia, disrupting the channel flow and causing a disposition of bottom material around Pier 1.

(B) The concrete of both piers was smooth and sound with no defects of structural significance observed.

RECOMMENDATIONS:

(A) The large diameter tree against the superstructure and the heavy drift at the upstream end of Pier 1 should be removed during routine maintenance.

(B) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

Date 6/30/2008 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 66510

Feature Crossed: Straight River

Feature Carried: CSAH No. 19

Location: District 6 - Rice County

Bridge Description: The bridge consists of three spans of multiple steel stringers bridge supporting a reinforced concrete deck. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers and abutments are founded on spread footings keyed into bedrock. The piers are labeled Piers 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Daniel G. Stromberg, P.E., S.E.

Dive Team: Clayton G. Brookins, Valerie Roustan

Date: October 23, 2007

Weather Conditions: Sunny, 55°F

Underwater Visibility: 1.0 foot

Waterway Velocity: 3.0 f.p.s

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of oblong concrete shafts with rounded ends supporting a hammerhead pier cap and supported by rectangular spread footings.

Maximum Water Depth at Substructure Inspected: Approximately 5.2 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap on the south end of Pier 2.

Water Surface: The waterline was approximately 10.4 feet below reference.
Waterline Elevation = 1044.9

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 7

Item 61: Channel and Channel Protection: Code 5

Item 92B: Underwater Inspection: Code B/10/07

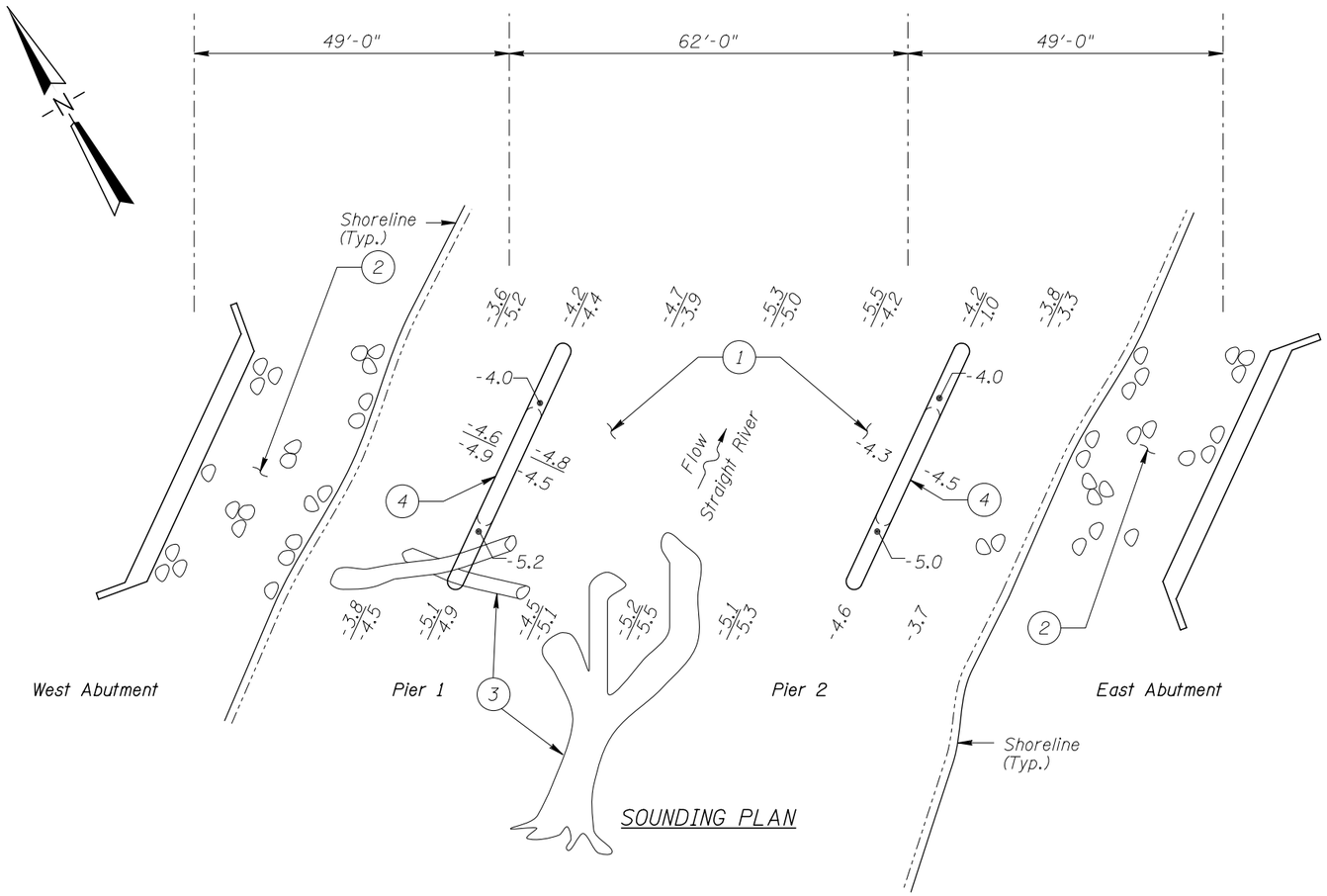
Item 113: Scour Critical Bridges: Code I/91

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____Yes X No

Photograph 1. View of Pier 1, Looking North.

Photograph 2. View of Pier 2, Looking Southwest.



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected at this bridge.
2. At the time of inspection, on October 23, 2007, the waterline was located approximately 10.4 feet below the top of the cap at the South end of Pier 2. This corresponds to a waterline elevation of 1044.9 based on design drawings.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

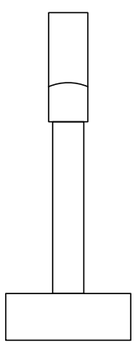
INSPECTION NOTES:

(1) The channel bottom material consisted of sandy gravel and scattered 6 inch diameter cobbles with no appreciable probe rod penetration.

(2) Riprap serves as a protective barrier between the abutments and piers, 2 feet diameter and smaller in size.

(3) Heavy timber debris accumulation, consisting of logs 1 foot diameter and smaller, was observed at the upstream nose of Pier 2, extending down both sides of the pier from 2 feet above the waterline to the channel bottom. A large tree was also observed at the span between piers and resting against the south fascia.

(4) The concrete of both piers was smooth and sound with no defects of structural significance observed.



TYPICAL END VIEW OF PIERS

N.T.S.

Note:

All soundings based on 2007 waterline location.

Legend

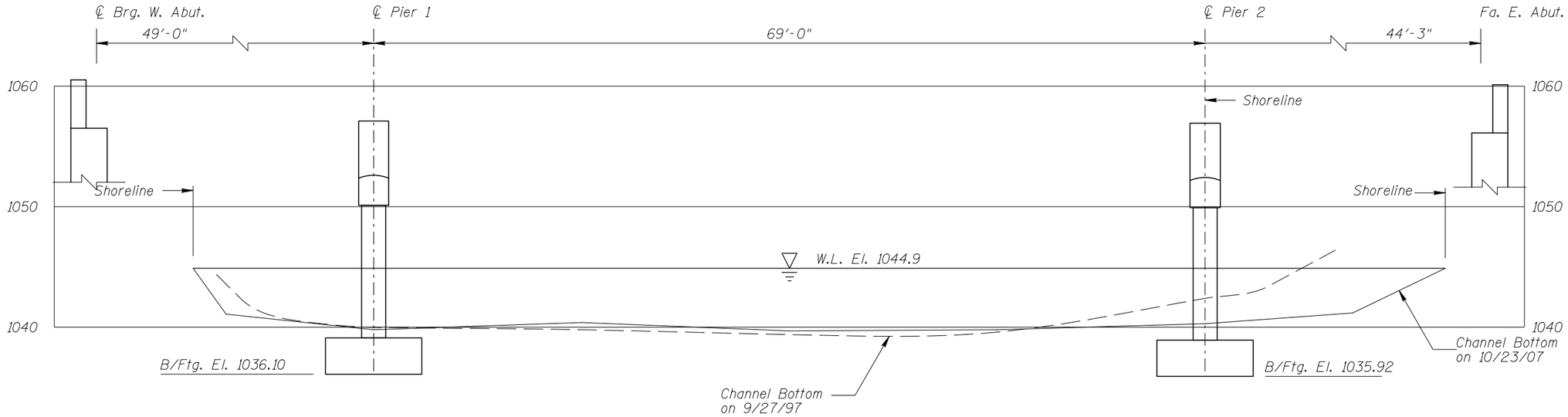
-4.5 Sounding Depth from Waterline (10/23/07)
-4.0 Sounding Depth from Waterline (10/27/97)

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

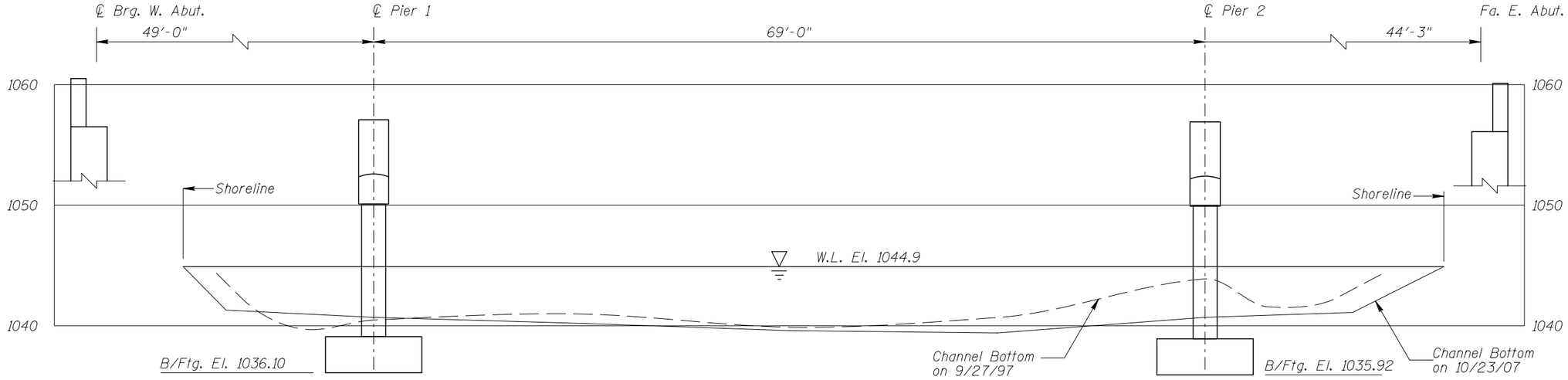
STRUCTURE NO. 66510
OVER THE STRAIGHT RIVER
DISTRICT 6, RICE COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: LJ	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT. 2007
Checked By: VR		Scale: NTS
Code: 52210122		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 66510
OVER THE STRAIGHT RIVER
DISTRICT 6, RICE COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: LJ	COLLINS ENGINEERS, INC. 123 North Wacker Drive Suite 300 Chicago, IL 60606 (312) 704-9300 www.collinsengr.com	Date: OCT. 2007
Checked By: VR		Scale: 1"=10'
Code: 52210122		Figure No.: 2

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 23, 2007

ON-SITE TEAM LEADER: Daniel G. Stromberg, P.E., S.E.

BRIDGE NO: 66510 WEATHER: Sunny, 55°F

WATERWAY CROSSED: Straight River

DIVING OPERATION: X SCUBA _____ SURFACE SUPPLIED AIR

_____ OTHER _____

PERSONNEL: Clayton G. Brookins, Valerie Roustan

EQUIPMENT: Scuba, Sounding Pole, Lead Line, Probe Rod, Camera, Scraper

TIME IN WATER: 8:10 a.m.

TIME OUT OF WATER: 8:40 a.m.

WATERWAY DATA: VELOCITY 3.0 f.p.s

VISIBILITY 1.0 foot

DEPTH 5.2 feet maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2

REMARKS: The concrete of the piers was in good condition with no structurally significant defects observed. A heavy accumulation of timber debris was observed at the upstream end of Pier 1, extending down both sides of the pier from 2 feet above the waterline to the channel bottom. A large tree was observed at the span between piers and resting against the South Superstructure Fascia, disrupting the channel flow and causing a disposition of material around Pier 1. The channel bottom appeared stable with no significant signs of erosion since the last inspection.

FURTHER ACTION NEEDED: X YES _____ NO

The large diameter tree against the superstructure and the heavy drift at the upstream end of Pier 1 should be removed during routine maintenance.

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 66510
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Daniel G. Stromberg, P.E., S.E.
WATERWAY CROSSED Straight River

INSPECTION DATE October 23, 2007

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	5.2	N	7	N	9	N	7	8	8	8	5	5	7	N	N	N	N	N
	Pier 2	4.5’	N	7	N	9	N	7	8	8	8	N	8	7	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: The concrete of the piers was in good condition with no structurally significant defects observed. A heavy accumulation of timber debris was observed at the upstream end of Pier 1, extending down both sides of the pier from 2 feet above the waterline to the channel bottom. A large tree was observed at the span between piers and resting against the South Superstructure Fascia, disrupting the channel flow and causing a disposition of material around Pier 1. The channel bottom appeared stable with no significant signs of erosion since the last inspection.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.